

Fuggles-Couchman & Elliott (1946) found this quelea nesting in northern Tanganyika, apparently in large colonies, and it was evidently very common. There is no real evidence that this is the case anywhere in the Luangwa Valley or at Lilongwe. J. M. Feely has told Benson that in the Luangwa (Lundazi District) he has seen some ten nests scattered through an area of one acre, together with nests of bishops *Euplectes* spp., in *Pennisetum* and *Phragmites* reeds, on a sand-bank on the edge of a river. This certainly does not fall into the category of a large colony, and the nest recorded by Benson & Pitman (1956) was solitary. Stoehr & Sclater (1906) record the Cardinal Quelea as "moderately common" along the lower Luangwa. But Benson tells me that in the course of 60 miles of travelling on foot through the valley (Fort Jameson District) in February, 1953 he did not see it on more than six occasions (solitary red-headed males distinguished), while E. L. Button has told him that it is also uncommon further north, in the Lundazi District. In spite of fairly intensive work in Nyasaland in the past, mine is the first record of its occurrence in that territory. It appears to be more common in the Rukwa Valley, Vesey-FitzGerald & Beesley (1960) giving it as "frequent", the Red-billed Quelea not merely as "abundant" but "very abundant".

References:

- Benson, C. W. and Pitman, C. R. S. (1956). Some breeding records from Northern Rhodesia. Part 3. *Ool. Rec.* 30: 37-43.
- Fuggles-Couchman, N. R. and Elliott, H. F. I. (1946). Some records and field-notes from north-eastern Tanganyika Territory. *Ibis* 88: 327-347.
- Stoehr, F. E. and Sclater, W. L. (1906). Notes on a collection of birds made in North-east Rhodesia. *Journ. S. A. Orn. Union* 2: 83-114.
- Vesey-FitzGerald, D. and Beesley, J. S. S. (1960). An annotated list of the birds of the Rukwa Valley. *Tanganyika Notes and Records* 55: 91-110.

Notes on *Ducula aenea* (Linn.), particularly the population of the Kangean Archipelago, and *Ducula problematica* Rensch from Sumba

by A. HOOGERWERF

Received 16th July, 1962

Before studying material of these pigeons it seems worth while to pay some attention to Junge's¹ experience when investigating the validity of Büttikofer's *Carpophaga vandepolli*. His paper shows how careful we should be when studying the colour-differences of the greyish feathering because those parts seem to become more vinaceous in skins of birds with much fat. I believe this to be correct and there is a second cause of discolouring of the plumage, viz. the use of petrol to get rid of fat, as I could prove in the Bogor Museum's workshop. Instead of cleaning the skins with hot sawdust, they were immersed in petrol, often for many hours, sometimes for a whole night. Owing to this method, birds from the same locality became very different, though—as could be proved after some experiments—not all *Ducula* skins showed the same striking differences. Probably the fat extracted from the skin by the petrol is partly absorbed by the feathers, discolouring the original tones, startling the taxonomist and leading to false conclusions.

Thus it is proved once more that not only is it necessary to prevent

chemicals coming into contact with the plumage immediately after the birds have been killed but that one should keep a watchful eye on the way in which the material is handled later. Skins preserved with alcohol, formalin, petrol, etc. should be considered with much criticism. As only in very rare cases it is known whether they were preserved with these liquids or not, it seems necessary to take *always* into account the important alterations in the plumage caused by these materials.

With a view to this I concentrated my attention on fresh skins preserved under my personal supervision and without the use of liquids when studying the material discussed below. Moreover the state of development of the gonads was taken into account, though in the present species this seems not to be of much importance regarding colour differences in the plumage.

The variation in the colour of the plumage in old skins is extremely large, except perhaps in the straw-coloured or rusty tinge on the neck of the subspecies *paulina*, *sulana* and *pallidinucha*, which I discussed earlier².

Comparison of Kangean and Bawean birds with those from the neighbourhood of Strait Sunda shows that those from the first mentioned islands are a trifle more vinaceous on the under surface. When picking out from a series of twenty birds the ten with the most vinaceous tint on the under parts, there are three skins from Bawean, three from Kangean, two from Ujung Kulon (West Java), one from Legundi and one from Sebuku Island (Sunda Strait). Separating nine skins with the most vinaceous tint on the occiput and the sides of the head and with the darkest vinaceous nuchal collar, we found four Bawean, four Kangean and one Legundi skins. This means all Kangean and Bawean birds, because the two Kangean skins not separated were of juvenile or badly damaged specimens. From all the 15 birds originating from Strait Sunda and surroundings there is only one approaching our Kangean and Bawean material on this point, though among the Strait Sunda specimens we found the largest number of fat birds, sometimes causing a post-mortem discolouring of the plumage in spite of all measures taken by me to prevent it.

Therefore I think it possible that the distinct dirty vinaceous nuchal collar, together with the extensive clear vinaceous tint on the occiput and the sides of the head, which show all Kangean and Bawean representatives of the species, may prove to be of subspecific importance.

Owing to these characters Kangean and Bawean birds seem to be somewhat intermediate between *pallidinucha* of Muna and Buton (South Celebes) and representatives of the subspecies *polia*. There is also a rather important difference in the length of the tail, for the populations of *Ducula aenea* from Kangean and Bawean have a longer tail than all the other birds of the same species studied by me and—as is evident from the figures given below—they average much less in weight.

Among all the birds of *Ducula aenea* before me there is only one skin from North Borneo approaching those of Kangean and Bawean in the colouring of the head and nuchal area, but this bird was collected as far back as 1912 and nothing is known about the way of its preservation. A second Bornean bird, collected 20 years ago, however, shows the clearest pileum, neck and upper mantle of nearly all specimens examined. Some birds obtained from the Smaller Sunda Islands (I could only examine

old material from these islands and four fresh skins, collected by me on Komodo and Rintja, near Flores) differ on the same points from those from Kangean and Bawean as do the others, but skins from Komodo and Rintja show much darker under tail-coverts than Kangean birds.

Above I followed Stresemann³ in considering the material coming from Java, Strait Sunda, Borneo and Flores as belonging to the subspecies *polia*.

The specimens of this pigeon recently obtained by me on Komodo and Rintja show only two characters of those indicated by Mayr⁴, viz. the little white on the frontal area and the lack of this colour around the eyes. Two old Flores skins have also little or no white on the feathers of the forehead and round the eyes and they average in having more vinaceous on head and nape, but the other characters cannot be discovered by me. This is also the case with the colour differences on the under tail-coverts and the difference in tint between the chest and the belly.

The particulars published by Mayr after studying so much material from the Smaller Sunda Islands seem to strengthen the existence of the subspecies *problematica*, because our four Komodo-Rintja skins which I suppose belong to this race, are so different in various respects from Mayr's description that it seems quite impossible to unite them with *polia*, which should inhabit the Smaller Sunda Islands, if Stresemann's view is right. This Komodo-Rintja material differs from all other skins before us in having the under tail-coverts darker maroon; also when comparing them with two skins obtained on West Flores and one from Lombok, which do not differ in this respect from other *polia*. They have also very uniform, rather dirty greyish under parts. On account of this character they resemble Rensch's⁵ *Ducula problematica* from Sumba. There is still another character which reminds one of *problematica*, for there is also less contrast between the greyish nuchal region and the metallic mantle than is the case in birds belonging to *polia*. The other characters, indicated by Rensch—differences in the feathering on the forehead and in the colour of the bill, are not present in our small series from Komodo-Rintja, nor do these four birds differ in size from *polia*.

Though our Komodo-Rintja birds were preserved in formalin* and the series is small, I think it important enough to discuss these birds here and to point to the similarity of Sumba's *problematica*, which must puzzle us—as it puzzled Rensch—when we know that this island is also inhabited by *polia*. Maybe Rensch studied a bird which came from Komodo or Rintja, not fully 100 km. north of Sumba and that—in reality—these small islands ought to be considered as parts of the *terra typica* of *problematica*. Afterwards I compared the type of *problematica* and could establish a striking resemblance between that skin and all four Komodo-Rintja birds.

These pigeons are extremely good fliers which certainly are able to cover a distance of 100 km. or more within a rather short time, so that the presence on Sumba of birds originating from Komodo or Rintja need not be rejected.

Because so little is known about the weight of freshly shot specimens of these large pigeons and we could establish rather important differences

* Some "experimental" skins from Strait Sunda preserved in formalin did not change in the tint of the under tail-coverts so that the dark colour of those parts in Komodo-Rintja birds seems not to be caused by that.

between birds from Kangean and Bawean and those coming from the other localities we visited, it may be of some use to add particulars.

From the freshly collected material it became evident that *Ducula aenea* obtained within the areas under discussion in this paper varied in weight from 410 (♀) to 600 (♂) grams: that birds in weight less than 500 gr. may be called thin (little or no fat), but heavy birds may not always be called fat, because even meagre birds may seem heavy when they have the crop and stomach full of fruits or remains thereof. Though the number of females taken by me is rather small (eight out of 25 specimens) it seems justified to consider females as being lighter in weight than males (425–550 against 410–600 gr.). Though birds with well developed gonads belonged to the lightest ones, our heaviest male showed gonads of 10 mm. and 3 ♂ with very small testes reached a weight of no more than 520, 521 and 535 gr. Kangean birds proved to average lightest in weight of all the material collected by me, for the males varied from 410 to 475 gr. only and the female weighed 460 gr.; both Bawean males weighed 520 and 535 and the only female 545 gr. The stomachs and crops of these Bawean pigeons were empty, but the Kangean birds had their stomachs partly or entirely filled with fruit remains, thus increasing their normal weight.

The weights of *Ducula aenea* obtained in the areas around the Strait of Sunda varied from 425–550 (♀) and 500–600 (♂) gr.

From these data it is evident that Kangean birds are much lighter in weight than all other *Ducula aenea*, recently collected by me in the areas around and on Java, even when we take into consideration that these birds had large gonads which often (but certainly not always) goes with having little or no fat.

Summarizing I would point out that representatives of *Ducula aenea* from the Kangean Archipelago not only differ from those known as *polia* because of being lighter in weight but they also show a longer tail and a more slender body, more resembling *Ducula rosacea*.

Moreover, it is evident from the particulars given above that occiput, sides of the head and nuchal area are more vinaceous than in *polia*; on the lower neck is a large zone of dirty vinaceous forming a nuchal collar somewhat resembling *paulina*, *sulana* and *pallidinucha*, in which, however, that collar is much more pronounced. Upper parts and wings are more bronzy tinged than in all other specimens studied by me.

On account of the under parts averaging a trifle more vinaceous, most conspicuous on the foreneck and throat, and owing to the light russet vinaceous on the sides of the head and on the occiput, Kangean birds show again much resemblance to *Ducula rosacea*. But the colour on the wings and upper surface is typical of *aenea* and that is also the case with size and structure of the bill and feathering of the tarsi which are those of *aenea*, certainly not of *rosacea*.

Those Kangean birds do differ at a glance from Mayr's⁴ description of his material from the Smaller Sunda Islands (which must be seen to belong to *polia*) by the much lighter chin and throat, the whitish forehead and area around the eyes, the less clear under tail-coverts and the russet nuchal collar.

The birds from Bawean Island seen by me are somewhat heavier and less slender than those from Kangean, but they give the impression of being closer to these birds than to *polia*.

Because I could not study enough fresh material belonging to this last subspecies from divergent parts of its range, especially from the Smaller Sunda Islands, I do not think it justified to describe Kangean's population of this pigeon as new, though there seems enough reason to do so.

On the islands Komodo and Rintja, situated between Flores and Sumbawa, we collected four *Ducula aenea* which seem to differ so importantly from the description Mayr gives for the population of this pigeon, inhabiting the Smaller Sunda Islands and from the many skins I could study, that it seems impossible to unite them with *polia*. They resemble Rensch's *Ducula problematica* from Sumba which could be confirmed after comparing our birds with his type specimen, though *problematica* is not recognized by Peters nor in recent literature.

Measurements: (in mm.)

♂♂ Wing; *polia*: 222, 224, 227, 232, 232, 234, 235, 236, 236, 236, 237, 244, 247, 247; *polia* (?), Kangean Islands: 227, 236, 237, 246; *polia* (?), Bawean Island: 237, 243; *problematica* (?), Komodo-Rintja: 245 mm.

Tail; *polia*: 137, 138, 140, 140, 142, 142, 145, 145, 145, 145, 146, 146, 146, 148; *polia* (?), Kangean Islands: 152, 152, 156, 161; *polia* (?), Bawean Island: 146, 160; *problematica* (?), Komodo-Rintja: 156 mm.

Culmen; *polia*: 20, 21.3, 21.5, 21.8, 22, 22, 22, 23.3, 23.9, 24.5, 25, 25.5, 27, 27.1; *polia* (?), Kangean Islands: 21.1, 23, 23.2, 25.6; *polia* (?), Bawean Island: 21.5, 25.5; *problematica* (?), Komodo-Rintja: 23.8 mm.

Max., min. and average measurements:

	<i>polia</i> Java, Sumatra, Borneo, Flores, Nusa Penida and Strait Sunda	<i>polia</i> (?) Kangean Islands	<i>polia</i> (?) Bawean Island	<i>problematica</i> (?) Komodo and Rintja
Wing:	$\frac{222-247}{234.93}$	$\frac{227-246}{236.50}$	$\frac{237, 243}{240}$	245
			$\frac{227-246}{237.67}$	
Tail:	$\frac{137-148}{143.21}$	$\frac{152-161}{155.25}$	$\frac{146, 160}{153}$	156
			$\frac{146-161}{154.50}$	
Culmen:	$\frac{20-27.10}{23.34}$	$\frac{21.1-25.6}{23.23}$	$\frac{21.5, 25.5}{23.50}$	23.8
			$\frac{21.10-25.60}{23.32}$	

♀♀ Wing; *polia*: 228, 229, 230, 234, 235, 240, 240, 246, 246; *polia*?, Kangean Islands: 230; *polia* (?), Bawean Island: 245, 251; *problematica* (?), Komodo-Rintja: 230, 231, 245 mm.

Tail; *polia*: 142, 143, 144, 145, 146, 147, 150, 150, 151; *polia* (?), Kangean Islands: 153; Bawean Island: 155, 160; *problematica* (?), Komodo-Rintja: 135, 144, 155 mm.

Culmen; *polia*: 20.5, 21.5, 22.9, 23, 24, 24, 26, 27, 27.1; *polia* (?), Kangean Islands: 23; *polia* (?), Bawean Island: 21.5, 24; *problematica* (?), Komodo-Rintja: 23.2, 24.2, 29 mm.

Max., min. and average measurements:

	<i>polia</i> Java, Sumatra, Borneo, Flores, N. Penida, Strait Sunda	<i>polia</i> (?) Kangean Islands	<i>polia</i> (?) Bawean Island	<i>problematica</i> (?) Komodo and Rintja
Wing:	$\frac{228-246}{236.44}$	230	$\frac{245, 251}{248}$	$\frac{230-245}{235.33}$
			$\frac{230-251}{242}$	
Tail:	$\frac{142-151}{146.44}$	153	$\frac{155, 160}{157.50}$	$\frac{135-155}{144.67}$
			$\frac{153-160}{156}$	
Culmen:	$\frac{20.5-27.1}{24}$	23	$\frac{21.5, 24}{22.75}$	$\frac{23.2-29}{25.47}$
			$\frac{21.5-24}{22.83}$	

*Wing-tail Index:**polia*: ♂♂ 60.91; ♀♀ 61.99*polia*(?), Kangean Islands: ♂♂ 65.64; ♀♀ 66.52 } ♂♂ 65.01; ♀♀ 64.46*polia*(?), Bawean Island: ♂♂ 63.75; ♀♀ 63.31 }

Weight:

♂♂ *polia*: 500, 515, 521, 535, 540, 545, 545, 570, 585, 598, 600 gr.*polia*(?), Kangean Islands: 410, 467, 475, 475 gr.*polia*(?), Bawean Island: 520, 535 gr.

average:

polia: 550.36 gr.*polia*(?), Kangean Islands: 456.75 gr. } 480.35 gr.*polia*(?), Bawean Island: 527.50 gr. }♀♀ *polia*: 425, 495, 510, 550 gr.; average: 495 gr.*polia*(?), Kangean Islands: 355, 460 gr.; average: 407.50 gr. } 453.33 gr.*polia*(?), Bawean Island: 545 gr. }

References:

- Junge, G. C. A. The mysterious *Carpophaga vandepolli* Büttikofer; *Zoologische Mededelingen*, 18, 1935, pp. 160-161.
- Hoogerwerf, A. Notes on *Ducula aenea* from Celebes and surrounding islands; *Zoologische Mededelingen*, 30, no. 18, pp. 283-288.
- Stresemann, Erw. On the birds collected by Pierre Poivre in Canton, Manila, India and Madagascar (1751-1756); *Ibis*, 94, 1952, pp. 499-523.
- Mayr, Ernst. The birds of Timor and Sumba; *Bull. Amer. Museum of Nat. History*, 3, 1944-1945, pp. 147-148.
- Rensch, Bernh. Über einige Vogelsammlungen des Buitenzorger Museums von den Kleinen Sunda-Inseln; *Treubia*, 13, 1931, pp. 372-373.

On a new race of *Streptopelia lugens*

by DEREK GOODWIN

Received 9th February, 1963

In the course of revising the pigeon collection in the British Museum (Natural History) I examined four males and three females of *Streptopelia lugens* (Rüppell) from Arabia (Wadi Hijla, Suda, Wadi Hulab and Wadi